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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,586	12/07/2000	Dror Avni	P-2448-US1	9625

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EXAMINER

HO, HOAI V

ART UNIT PAPER NUMBER

2818

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,586

Applicant(s)

AVNI ET AL.

Examiner

Hoai V. Ho

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

1. This office acknowledges receipt of the following items from the Applicant:

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **June 16, 2003** has been entered.

2. Claims 1-14 are presented for examination.

Claim Rejections - 35 USC § 112

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, lines 1-5, the "method using programming pulses applied to ... gate of one or more memory cells ... adapting the duration or the amplitude of said programming pulses as a function of the different between a present state of the one or more memory cells and a target state of the one or more memory cells" was not described in the specification. During a program operation the amplitude or duration applied to the gate of the memory cell is fixed as described in the specification.

The amended claim 1 and the argument filed on June 12, 2003 the applicant intends to change (by using a word "adapting" instead) the amplitude or duration applying to the drain or gate as a function of the different between a present state of the one or more memory cells and a

Art Unit: 2818

target state of the one or more memory cells. Therefore, "method using programming pulses applied to ... gate of one or more memory cells ... adapting the duration or the amplitude of said programming pulses as a function of the difference between a present state of the one or more memory cells and a target state of the one or more memory cells" is newly added to the claim 1 as a new matter.

4. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

In claim 1, the omitted steps are: what is a voltage condition of the other terminals of the memory cell? For example, adapting (changing as the applicant claimed) the duration or the amplitude of the programming pulses are applied to the drain of the memory cell and what is the voltage condition of the source and the gate?

Claims 2-14 are rejected due to the rejection of its parent claim.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "adapting" in claim 1 is a relative term which renders the claim indefinite. The term "adapting" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. "Adapting" is used in the claim has been rendered indefinite.

Art Unit: 2818

Applicant's argument filed on June 12, 2003 indicates that a meaning of "adapting" is the amplitude and duration has been changed as a function of the difference between a present state of the one or more memory cells and a target state of the one or more memory cells. Applicant argued that the amplitude and duration in the two Cohen and Kahn references are predefined, or fixed and not adapted based on the current state of the cells being programmed. Examiner disagrees this argument because Cohen's abstract discloses that a "programming pulse having a programming level is applied to the non-programmed cells ... The steps of verifying, flagging and applying are then repeated until all of the cells verify as programmed at least once." Cohen's programming method is adapted based on the state of the memory cell such as repeating the program and verify of the selected memory cell until all cells verify as programmed.

Kahn's abstract teaches that a "method for precision hot carrier injection programming of single or plurality of nonvolatile memory cells is described. Each programming is achieved by incrementally changing a programming current pulse flowing between the source and drain in the memory cell during successive program cycles and a constant current during verify cycles." Therefore, Kahn's programming method is adapted based on the state of the memory cell after verifying and the program is repeating by incrementally changing a programming current pulse flowing between the source and drain of the selected memory cell until all cells verify as programmed.

6. For the above reasons, it is believed that the rejections of claims 1-14 under 35 U.S.C. 102 by Cohen and Kahn should be sustained as set forth in the previous Office action in
Page No. 10.

Art Unit: 2818

Claims 1-14 are also rejected in view of the newly discovered reference(s) to Fong. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Fong U.S. Patent No. 5,537,358.

Figure 12 of Fong are directed to a method for programming a memory array using programming pulses applied to either the drain or gate of one or more memory cells, the method comprising: adapting the duration or the amplitude of said programming pulses as a function of the difference between a present state of the one or more memory cells and a target state of the one or more cells, wherein the amplitude or duration of the programming are correlated to the difference between a present state of the one or more memory cells and a target state of the one or more cells (col. 12, line 7 to col. 13, line 20).

9. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

10. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

Art Unit: 2818

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (703) 308-4839. Other inquiries of this application should be called to (703) 308-0956 or the fax number (703) 308-7722.



H. Ho
July 4, 2003



Hoai V. Ho
Primary Examiner
Art Unit 2818